

WHAT IS CLAIMED IS:

- 1 1. A laser apparatus, comprising:
2 an elongate laser chamber;
3 an electrode structure disposed within the chamber, the electrode
4 structure comprising an anode spaced apart from a cathode; and
5 an elongate baffle disposed in the laser chamber, the baffle adapted to
6 arrest a plurality of particles generated within the chamber.
- 1 2. The laser apparatus as in claim 1, wherein the baffle comprises an
2 open-celled foam.
- 1 3. The laser apparatus as in claim 2 wherein the open-celled foam
2 comprises an open-celled metal foam.
- 1 4. The laser apparatus as in claim 3 wherein the open-celled metal foam
2 is selected from a group of metal foams consisting essentially of nickel, aluminum, brass,
3 steel, and copper.
- 1 5. The laser apparatus as in claim 1 wherein the baffle comprises an
2 open-celled ceramic.
- 1 6. The laser apparatus as in claim 1 wherein the elongate baffle is adapted
2 to at least partially fill the laser chamber.
- 1 7. The laser apparatus as in claim 1 wherein the electrode structure
2 further comprises a plurality of pre-ionization pins, and wherein at least some of the plurality
3 of particles are generated by the pre-ionization pins.
- 1 8. The laser apparatus as in claim 1 wherein at least some of the plurality
2 of particles comprise a metal.
- 1 9. The laser apparatus as in claim 1 wherein the laser chamber comprises
2 an excimer laser.
- 1 10. The laser apparatus as in claim 1 wherein the laser chamber is devoid
2 of an active filtration system.

1 11. The laser apparatus as in claim 1 wherein the elongate baffle is
2 generally parallel to the electrode structure.

1 12. The laser apparatus as in claim 1 further comprising a first end baffle
2 positioned adjacent a first end of the electrode structure and a second end baffle positioned
3 adjacent a second end of the electrode structure.

1 13. The laser apparatus as in claim 12 wherein the first and second end
2 baffles comprise an open-celled foam.

1 14. The laser apparatus as in claim 12 wherein the first and second end
2 baffles are adapted to control a gaseous flow pattern adjacent the first and second electrode
3 structure ends.

1 15. The laser apparatus as in claim 14 further comprising an optics
2 package disposed at an end of the laser chamber, and wherein the first end baffle is adapted to
3 prevent the gaseous flow pattern from washing over the optics package.

1 16. The laser apparatus as in claim 1 wherein the elongate baffle is further
2 adapted for attenuating acoustic waves.

1 17. A laser apparatus, comprising:
2 a casing defining a laser chamber cavity;
3 an electrode structure disposed within the laser chamber cavity, the
4 electrode structure having first and second ends disposed adjacent corresponding first and
5 second laser chamber ends;
6 a gas circulation mechanism for circulating a gas within the laser
7 chamber cavity; and
8 a baffle system disposed in the laser chamber cavity, the baffle system
9 adapted for directing the gas towards the electrode structure and for providing a non-turbulent
10 gas flow around the electrode structure first and second ends.

1 18. The laser apparatus as in claim 17 wherein the baffle system comprises
2 an elongate primary baffle positioned generally parallel to the electrode structure.

1 19. The laser apparatus as in claim 17 wherein the baffle system comprises
2 a first end baffle positioned adjacent the first electrode structure end and a second end baffle
3 positioned adjacent the second electrode structure end.

1 20. The laser apparatus as in claim 17 wherein the baffle system is further
2 adapted to arrest a plurality of particles generated within the laser chamber cavity.

1 21. The laser apparatus as in claim 17 further comprising an optics
2 package disposed at the first laser chamber end, and wherein the baffle system is adapted to
3 prevent the circulating gas from washing over the optics package.

1 22. The laser apparatus as in claim 17 wherein the baffle system comprises
2 an open-celled foam.

1 23. The laser apparatus as in claim 22 wherein the open-celled foam
2 comprises an open-celled metal foam.

1 24. The laser apparatus as in claim 17 wherein the baffle system fills
2 greater than about one percent (1%) of the laser chamber cavity.

1 25. The laser apparatus as in claim 17 wherein the baffle system is adapted
2 to attenuate at least a portion of the acoustic energy within the laser chamber cavity during
3 operation of the laser apparatus.

1 26. A method of filtering particulates from a gas in a laser apparatus, the
2 method comprising:

3 providing a laser apparatus comprising a chamber, an electrode
4 structure disposed in the chamber, and a gas circulation system;

5 inserting a baffle system into the laser chamber, the baffle system
6 comprising an open-celled foam; and

7 engaging the gas circulation system to circulate the gas within the laser
8 chamber, the gas having a plurality of particles disposed therein;

9 wherein at least some of the particles are arrested by the baffle system.

1 27. The method as in claim 26 wherein the baffle system comprises an
2 open-celled metal foam.

1 28. The method as in claim 26 wherein the laser apparatus further
2 comprises an optics package, and the baffle system is further adapted and positioned to
3 prevent the circulating gas from washing over the optics package.

1 29. The method as in claim 26 wherein the baffle system comprises first
2 and second end baffles disposed adjacent first and second ends of the electrode structure,
3 respectively, and wherein the first and second end baffles operate to smooth a gas flow
4 pattern at the first and second electrode structure ends.

1 30. An excimer laser comprising:
2 a laser chamber;
3 a lasing gas disposed within the chamber;
4 a pair of lasing electrodes within the chamber; and
5 an open celled metallic foam disposed in the laser chamber so as to
6 collect particles generated in the chamber during firing of the laser.

1 31. The excimer laser as in claim 30 wherein lasing of the gas between the
2 electrodes during firing of the laser generates a photoablative laser beam suitable for removal
3 of corneal tissue so as to correct refraction.

1 32. The excimer laser as in claim 30 wherein lasing of the gas between the
2 electrodes during firing of the laser generates a pulsed laser having a wavelength of about
3 193 nm.